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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Fufang Zha et al.
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For: METHODS OF CLEANING MEMBRANE MODULES
Examiner: Menon, Krishnan S.
Art Unit: 1797

CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. § 1.8(a)

The undersigned hereby certifies that this document is being electronically filed in accordance with § 1.6(a)(4), on the 12th day of November, 2009.


Gregory Gerstenzang, Reg. No. 59,513

Commissioner for Patents

Declaration of Bruce Biltoft Under 37 CFR 1.132

Sir:

I, Bruce Biltoft, of 51 Park Avenue, Chatswood, New South Wales 2067, Australia hereby declare:

- 1) I am Managing Director at MEMCOR Products, 1 Memtec Parkway, South Windsor, New South Wales 2756, Australia, which is part of Siemens Water Technologies Corp. I have held this position for six years. As Managing Director I oversee the entire Memcor operation. Thus, I am familiar with sales figures and market share estimates as well as marketing practices and customer preferences with regard to the membrane filtration products sold by Siemens Water Technologies Corp.
- 2) I am familiar with the present application specified above, and with the claims recited therein.
- 3) A number of the membrane filtration products sold by Siemens Water Technologies Corp, including the MEMCOR® CP Ultrafiltration System, and the MEMCOR® XP

Ultrafiltration System perform in accordance with a method as recited in at least independent claim 1 of the current application. Marketing brochures for these products are included as appendices to this declaration.

4) Prior to the introduction of products performing the method recited in claim 1 of the current application, hollow fiber membrane filtration systems typically diverted a portion of permeate to a permeate storage tank during filtration, and during a backwash operation, pumped permeate from this storage tank in a reverse direction from that of filtration through the hollow fiber membranes. A solution was sought which would allow the permeate pump and storage tank to be eliminated and the backwash process to be performed in a shorter period of time. A solution which achieved these sought after goals was developed, and the products listed above, which operate in accordance with this solution, were introduced to the market. By performing the method recited in claim 1 of the current application, these products achieve these sought after goals, and as a result, exhibit advantages over competing systems.

5) For example, performing a method including isolating the lumens of the membranes, the manifold, and a portion of piping of membrane filtration system through which permeate is withdrawn during filtration when the filtration process is stopped, and applying a gas to a portion of liquid permeate present in the isolated lumens, manifold, and portion of piping through a gas inlet on a side of a valve in direct fluid communication with the membrane module to effect backwash of the membranes module permits the elimination of any backwash pump and tank for holding the permeate for backwash of the system. This provides for a reduced capital cost as opposed to systems including a backwash pump and permeate holding tank. Elimination of the backwash pump and permeate holding tank reduces the capital cost from that of a typical membrane filtration system by approximately 5%.

6) Using a pressurized gas for effecting a permeate backwash provides for achieving a short duration of back-pulse that cannot be economically achieved by means of a pump. This allows the systems operating in accordance with claim 1 of the present application to perform with a higher efficiency than systems employing the use of a backwash pump. Backwash time can be

reduced by approximately 5%, resulting in an increased operating efficiency of approximately 1% in systems operating in accordance with claim 1 of the present application vs. systems employing the use of a backwash pump


7) Applying a gas to a portion of liquid permeate present in the isolated lumens, manifold, and portion of piping through a gas inlet on a side of a valve in direct fluid communication with the membrane module and directing the portion of liquid permeate into the membrane module through a first end of the membrane module and through a second end of the membrane module to effect backwash provides for reducing the amount of liquid backwash waste when compared to systems where permeate for backwashing is supplied from a permeate tank. This allows the systems operating in accordance with the methods claimed in the present application to operate in an environmentally-friendly manner. This also allows the systems operating in accordance with the method of claim 1 of the present application to operate at a lower cost than competing systems which generate more backwash waste which is typically further treated or disposed of at additional cost. Backwash waste is typically 20% less.

8) Likewise, utilizing a gas to push permeate through the pores of the membranes of the membrane module instead of a permeate pump provides for low energy operation of systems operating in accordance with the method of claim 1 of the present application. This provides for both environmentally-friendly and low cost operation of these systems.

9) Backwashing by directing the portion of liquid permeate into the membrane module through a first end of the membrane module and through a second end of the membrane module provides for uniform backwash cleaning along the length of the fiber membranes utilized. This permits the membrane module to operate at a higher efficiency and decreases the operating cost of systems operating in accordance with the method of claim 1 of the present application.

10) Products operating in accordance with the method recited in claim 1 of the present application were first introduced in 2005.

- 11) The advantages described above are touted by our sales and marketing teams when presenting customers with information about our products which operate in accordance with the method recited in claim 1 of the present application.
- 12) The advantages described above have produced increased customer demand for products performing according to the method recited in claim 1 of the present application, resulting in the commercial success of these products.
- 13) The market share for membrane filtration systems sold by Siemens Water Technologies Corp. which perform according to the method recited in claim 1 of the present application is approximately 25%.
- 14) Sales of products performing according to the method recited in claim 1 of the present application have increased by 500% since the year they were first introduced.
- 15) Sales of products performing according to the method recited in claim 1 of the present application have increased by 500% over the past four years.
- 16) Sales of systems which perform according to the method recited in claim 1 of the present application comprise 50% of sales for all hollow fiber membrane filtration systems sold by Siemens Water Technologies Corp.
- 17) I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.


Bruce Billoft
Managing Director

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Date